LOYOLA COLLEGE (AUTONOMOUS), CHENNAI – 600 034

B.Sc. DEGREE EXAMINATION – **COMMERCE**

SECOND SEMESTER – **APRIL 2013**

ST 2104 - BUSINESS STATISTICS

Date : 06/05/2013 Dept. No. Max. : 100 Marks

Time : 9:00 - 12:00

SECTION A

Answer ALL questions. **(10 x 2 = 20 marks)**

1. State the merits and demerits of mean.
2. Define kurtosis.
3. What are the various measures of dispersion?
4. What are the properties of good averages?
5. Calculate harmonic mean for the following data;

   10, 12, 15, 20, 24
6. Find the standard deviation of 16, 13, 17, 22
7. What do you understand by mean deviation?
8. Explain the concept of correlation between two variables.
9. Define feasible region.
10. Explain the concepts of 2 x 2 games?

SECTION B **(5 X 8 = 40 Marks)**

Answer any FIVE questions

11. Find geometric mean for the following data:

Marks	: 0 – 10	10 – 20	20 – 30	30 – 40
No.of Students:	5	8	3	4

12.From an ordinary frequency table from the following cumulative distribution of marks obtained by 22 students and calculate mean and median

Less than 10	**3**
Less than 20	**8**
Less than 30	**17**
Less than 40	**20**
Less than 50	**22**

13. Compute coefficient of quartile deviation from the following data:

Wages	**0-10**	**10-20**	**20-30**	**30-40**	**40-50**	**50-60**	**60-70**	**70-80**
No. of workers	**20**	**45**	**85**	**460**	**70**	**55**	**35**	**30**

14. The first four moments of a distribution about the value 2 are 1, 2.5, 5.5 and 16respectively . Obtain the four moments about mean comment on the nature of the distribution.

15. For a distribution Bowley's co-efficients of skewness is 0.56 Q_1 = 16.4 and median = 14.2.What is its coefficients of quartile deviation

16. Ten competitors in a beauty contest are ranked by 3 judges in the following order:

1st judge	2	7	1	5	3	4	8	6	10	9
2nd judge	10	6	3	8	7	2	9	5	4	1
3rd judge	2	5	6	9	1	3	7	4	8	10

Use rank correlation coefficient to determine which pair of judges has the nearest approach to common taste in beauty.

17. From the following data calculate the four-year moving average and determine the trend values. Find the short-term fluctuation.

Year	1991	1992	1993	1994	1995	1996	1997	1998
Annual sales(Rs.)	36	43	43	34	44	54	34	24

18. Use the graphical method to solve the following LPP.

Maximize Z = 5x + 7y

Subject to constraints,

$x + y \leq 4$

$3x + 8y \leq 24$

$10x + 7y \leq 35$

$x , y \geq 0$

SECTION C **(2 X 20 = 40 Marks)**

Answer any TWO questions

19. a) Find the mean, median and mode from the following frequency distribution.

Age	**20 - 25**	**25 - 30**	**30-35**	**35-40**	**40-45**	**45-50**	**50-55**	**55-60**
No. of people	**14**	**28**	**33**	**30**	**20**	**15**	**13**	**7**

19. b) The mean of two samples of sizes 500 and 600 were respectively 186 and 175.The corresponding standard deviations were respectively 9 and 10.The variable studied was height in centimeters. Obtain the mean and variance of combined samples. (10).

20.From the following frequency distribution, calculate the first four central moments, β_1 and β_2.Also comment upon the nature of distribution.

Class	**10- 14**	**15-19**	**20-24**	**25-29**	**30-34**	**35-39**	**40-44**	**45-49**	**50-54**
Frequency	**1**	**4**	**8**	**19**	**35**	**20**	**7**	**1**	**5**

(20)

21. a) Find two regression lines from the following data:

X	**158**	**160**	**163**	**165**	**167**	**170**	**172**	**175**	**177**	**181**
Y	**163**	**158**	**167**	**170**	**160**	**180**	**170**	**175**	**172**	**175**

Estimate Y, when X = 164. (10)

21. b)Calculate seasonal indices by the simple average method from the following data:

Year	1st Quarter	2nd Quarter	3 rd Quarter	4 th Quarter
2006	**75**	**60**	**54**	**59**
2007	**86**	**65**	**63**	**80**
2008	**90**	**72**	**66**	**82**
2009	**100**	**78**	**72**	**93**

22.(a) Find the initial basic feasible solution by using Vogel's Approximation Method for the following Transportation problem:

	D1	D2	D3	D4	D5	Availability
A1	5	7	10	5	3	5
A2	8	6	9	12	14	10
A3	10	9	8	10	15	10
Demand	3	3	10	5	4	

(10)

22(b)) Solve the following game by using Graphical method:

		Player A				
		a_1	a_2	a_3	a_4	a_5
Player B	b_1	-2	5	3	2	-1
	b_2	4	-1	6	-5	1

(10)

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